65.1 General Discussion

To ensure that transportation facilities developed using Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) funds continue to operate safely with no loss of function during their useful lives, federal law requires that they be properly maintained. The local agency and the Washington State Department of Transportation (WSDOT) each have responsibilities in this area: the local agency maintains the projects, and the WSDOT reviews the local agency's maintenance efforts.

"To maintain" shall mean to perform normal maintenance operations for the preservation of the entire project, including roadway surface, shoulders, roadsides, structures, and such traffic control devices as are necessary for its safe and efficient utilization.

The local agency agrees in Section IX of the Local Agency Agreement to maintain projects constructed on any federal aid system.

A detailed description is given in Title 23, Subpart G, of the Code of Federal Regulations.

65.2 Review of Maintenance

WSDOT will conduct periodic reviews of the maintenance of federally funded projects by local agencies. The local agency will be contacted by the Regional Highways and Local Programs Engineer when deficiencies in their maintenance of the projects are reported.

65.3 Management Systems

.31 General. Highways and Local Programs is firmly committed to assisting local agencies in implementing management systems. Although not required for use of federal funds, implementation of management systems are required for sound management practices. Management systems are a valuable tool to provide consistent, accurate, and objective information to base management decisions throughout the agency's management processes. They provide the most effective method for an agency to manage its resources whether those resources are its funds, work force, or capital assets.

The purpose of the management systems is to improve the efficiency of the local agency's transportation system and to protect its investment in transportation infrastructure. These systems act as tools to provide pertinent information necessary to make more effective management decisions.

Highways and Local Programs encourages agencies to implement their own management systems for bridges, safety, pavements, and where applicable, to participate actively in their regional congestion management system.

Federal funds available to develop and implement the management systems include:

- National Highway System.
- Surface Transportation Program.
- FHWA State Planning and Research.
- CM/AQ funds may be used in certain cases where the system will contribute to attainment of national air quality standards.
- Highway Bridge Replacement/ Rehabilitation Program funds may be used for a bridge management system and the input and maintenance of data.
- Federal Transit Act, Section 9 (Capital, Planning, and Operating).
- Federal Transit Act, Section 9 (Transit Planning).
- Federal Transit Act, Section 26(a)(2) (State Planning and Research).

.32 Pavement Management System (PMS). PMS is a systematic process that provides, analyzes, and summarizes pavement information for use in selecting and implementing cost-effective pavement construction, rehabilitation, and maintenance programs. PMS applies to all federally functional classified routes except those classified as rural minor collector or local.

WSDOT recommends all agencies implement a computerized PMS if possible. All counties are required to have a PMS, per WAC 136-320, to receive County Arterial Preservation Program (CAPP) funds. The benefits gained with such a system far out weigh the slight increase in effort and initial expense. To provide full benefits, the system should include a method of data collection/ management and data analysis. Elements of data collection/management should include:

- an inventory of the road/street network;
- work history of the network including surfacing and base layer types, thickness, and year of application;
- a routine survey of the road/street pavement surface condition at least every two years using the *Pavement Surface Condition Rating Manual*; and
- a method of storing and retrieving the collected data.

The areas of analysis should include pavement surface condition performance with a prediction model that uses the pavement surface distress data to predict future pavement condition and service life, investment at both the network and project level, and the performance of the pavement management system itself.

Most agencies in the state currently involved with PMS have systems based on data collection described in the *Pavement Surface Condition Rating Manual*. Agencies are strongly encouraged to use this process since it is a proven method used by most agencies. It conforms to WAC 136-320 (for counties), and provides both cities and counties a wealth of support through existing training courses, manuals, videos, and experience of other agencies already using the method.

To promote the use of a computerized pavement management system by cities, Highways and Local Programs, on behalf of local agencies, released a Request for Quotation and Qualification (RFQQ) in October 1997, to private companies who had PMS software. Prior to the release of the RFQQ, Highways and Local Programs worked with local agencies to develop a set of criteria based on existing Washington State standards for pavement management. The criteria was based on current Washington local agencies standard practices from the *Pavement Surface Condition Rating Manual*. The RFQQ set out the criteria which vendors needed to meet in order to be placed on an approved list. Cities could then select from this list any of the available PMS software. After the purchase of PMS software, Highways and Local Programs will assist each city with a 50% match, up to $1,000.

Initially, the main focus of the grant program was to:

- Be able to offer a viable replacement for the Highways and Local Programs supported PaveSmart;
- Encourage cities to upgrade from a paper and pencil PMS to a computer system;
- Encourage cities not using a PMS to get started;
- Encourage cities to replace systems that are not based on the "Washington method."

Although a computerized system is recommended, Highways and Local Programs provides StreetWise, a simplified paper-and-pencil system, to store data and calculate the pavement surface condition for those smaller agencies that do not want to use a computerized process. StreetWise is designed to help smaller agencies manage their street network at the entry level. When added to a basic filing system and work history, StreetWise provides a very functional PMS. It is based on the more sophisticated computerized systems used by larger agencies in Washington and results in pavement condition ratings that are comparable. This means that if an agency opts to use a computer software version at a later date, both the inventory and inspection data are usable, no historical data or collection efforts are lost.

StreetWise has been designed with the smaller city street network in mind and was developed with extensive input from several small cities. The system provides a basic inventory, data collection/storage, pavement surface condition evaluation, maintenance strategy, and budget summary. It provides the ability to prioritize maintenance/construction needs but stops short of providing a predictive model for determining pavement life expectancy or service life. For these features, the agency should use a computer software version.

StreetWise is comprised of a Pavement Condition Form and five look-up tables to determine the pavement condition. An additional Budget Summary Sheet is also provided to assist in developing a pavement maintenance/construction budget. To increase simplicity, data collection and mathematical calculations have been minimized.

While StreetWise is useful, smaller agencies are strongly encouraged to adopt and implement a PMS program like those in use by the larger jurisdictions because of the forecasting capabilities they offer. The benefits that this capability offers in long-range planning, program development, and budgeting far outweigh the additional effort required to operate a computerized system.

Washington Local Agency Pavement Management Resources

Pavement Management Programs

Highways and Local Programs	(360) 705-7352	• PMS Grant Program • StreetWise (NonComputer)
CRAB	(360) 753-5989	• CPMPS-CRIS
Various Vendors		
NWPMA	(360) 705-7352	• Interagency Support

Training and Direct Support

Highways and Local Programs	(360) 705-7352	• PMS Grant Program • StreetWise • Introduction to PMS • Direct Support
CRAB (Counties)	(360) 753-5989	• CPMPS • CRIS • Introduction to PMS • Direct Support
TRANSPEED	(206) 543-5539	• Introduction to PMS • Effective Implementation of PMS
WST^2 Center	(360) 705-7352	• Pavement Condition Rating • NHI Courses • General Training Services
Various Vendors		• Training • Direct Support

Publications and Other Aids

Highways and Local Programs	(360) 705-7386	• *A Guide for Local Agency Pavement Management* • *Pavement Surface Condition Rating Manual* • *Pavement Surface Condition Rating Video* • *Pavement Surface Condition Field Rating Manual for Asphalt Pavement* • Evaluation of Automated Pavement Distress Data Collection Procedures for Local Agency Pavement Management

.33 Bridge Management System (BMS). The purpose of a management system for bridges is to provide necessary information for making sound decisions on maintenance, repair, rehabilitation, or replacements of bridges. BMS applies to all bridges on all public roads.

BMS is a decision support tool that supplies analyses and summaries data, has mathematical models to make predictions and recommendations, and provides the means by which alternative policies and programs may be efficiently considered. A BMS includes formal procedures for collecting, processing, and updating data, predicting deterioration, identifying alternative actions, predicting costs, determining optimal policies, performing short- and long-term budget forecasts, and recommends programs and schedules for implementation within policy and budget constraints.

The BMS is managed by the WSDOT Bridge and Structures Office. The state uses Pontis, a software package developed by AASHTO and sponsored by FHWA. The Bridge Office maintains the database and provides system output. Local agencies have had direct involvement in Pontis implementation through the Bridge Inspection Committee (BIC) and the Bridge Replacement Advisory Committee (BRAC). For further information, contact the Highways and Local Programs Bridge Engineer at (360) 705-7379.

Local agencies are not required to implement Pontis themselves, but it is available if they desire to do so. They may use their existing systems and processes. Agencies shall perform their own bridge condition surveys and provide the condition data to WSDOT.

Although the Pontis Survey format is different than that used for the National Bridge Inventory (NBI), a separate inspection to collect data is not necessary. There is currently computer software in development that will be used by WSDOT to automatically convert Pontis data to the NBI format. Until the new software is fully developed, data will need to be collected in both the existing and Pontis formats.

Highways and Local Programs will support local agencies in implementing the statewide system by providing training for inspectors in condition surveys and to other staff in using the Pontis output. Training and technical assistance in the use of Pontis itself will also be available, for those agencies who choose to use it themselves.

.34 Highway Safety Management System (SMS). SMS is a systematic process that has the goal of reducing the number and severity of traffic crashes.

The Washington SMS has two key elements, the collaboration process and the decision process. The collaboration process is basically a communications and information sharing network that links all of the state's safety stakeholders for sharing information and safety needs. The central feature of this process is the SMS Standing Committee, a formalized, multi-jurisdictional team comprised of all transportation safety stakeholders in Washington. Team members represent federal, state, regional, and local organizations, including individual cities and counties if they choose to participate. The committee provides a forum for sharing safety needs, identifying solutions, and coordinating implementation of the solutions. The Standing Committee has established several subcommittees to focus on specific areas such as funding, training, programming, etc., and active local agency participation is greatly encouraged.

The second key element is the Five-Step Process, a simple, logical step-by-step process to assist in making effective safety decisions. Those steps are:

1. Needs Identification
2. Solution/Resource Development
3. Investment Prioritization/Implementation
4. Investment Tracking
5. Investment Evaluation

Local agencies are strongly encouraged to review and evaluate their current transportation safety procedures and processes to see where they can be improved with respect to the Five-Step Decision Process.

Although developing a formalized SMS within an agency is not mandated within the Washington State SMS, Highways and Local Programs recognizes the need for such systems and the benefits gained in saving lives and in reducing injuries. A local agency SMS will provide an objective method of identifying those safety problems and the countermeasures that will provide the most effective payback. As a result, Highways and Local Programs strongly encourages local agencies to become involved in enhancing their own safety management process and is actively supporting those agencies in their effort to do so.

.35 Congestion Management System (CMS). CMS is a systematic process that provides information on transportation system performance and alternative strategies to alleviate congestion and enhance the mobility of persons and goods. The purpose of CMS is to develop, establish, and implement a system for managing congestion. The CMS is managed at the MPO and state levels. Cities, counties, and those MPOs without Transportation Management Areas (TMAs) are required to have their own individual congestion management systems. The three MPOs with the three TMAs will manage their own self-defined systems. WSDOT will be responsible for the remainder of the state.

The CMS is centered around Washington's existing planning and programming processes with modifications. It consists primarily of the congestion evaluation and needs assessment processes used to produce the current "Washington Transportation Policy Plan" and the "Washington State Systems Plan."

A committee composed of WSDOT, MPOs, transit agencies, cities, counties, transportation researchers, and FHWA provides coordination between the individual participating system managers in the areas of CMS components, scoping, and analysis of statewide topics related to CMS.

.36 Traffic Monitoring Systems for Highways (TMS). TMS is a systematic process for the collection, analysis, summary, and retention of highway related person and vehicular traffic data, including public transportation on public highways and streets.

The TMS is not a management system but rather a series of requirements for data collection supporting the management system and various federal data collection processes.

These monitoring requirements are managed by the WSDOT TRIP Division. Data collected by local agencies that is supplied to FHWA or to the six management systems must meet these requirements. A detailed description of the requirements of the TMS can be found in Title 23, Subpart H, of the Code of Federal Regulations.

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